REMARKS

In the Office Action of June 22, 2005, the drawings were objected to as failing to show the feeder hopper recited in claim 16. Applicant respectfully submits that the drawings (see Figure 1) do in fact show the feeder hopper 12 and its relationship to the other components in the system. However, pursuant to the above amendments, independent claim 16 and dependent claims 17-20 have been cancelled. Accordingly, the objection to the drawings has been satisfied.

The specification was objected to as failing to provide proper antecedent basis for the terms "feeder hopper", "feeder conveyor" and "carrier conveyor" as used in claim 16. For the same reasons as discussed above, the objection to the specification with respect to the term "feeder hopper" has been overcome. With respect to the terms "feeder conveyor" and "carrier conveyor", exact terms are not required in the specification to satisfy the written description requirement of the first paragraph of 35 U.S.C. § 112 (see MPEP § 1302.01). Nevertheless, pursuant to the above amendments, claim 16 has been cancelled. It should be noted, further, that original claim 16 of the application as filed, which does form part of the application as filed, does include both the terms "feeder conveyor" and "carrier conveyor". In view of the above, it is submitted that this objection to the specification has been overcome.

Claims 1-3, 5-7 and 9-12 have been rejected under § 102(b) as being anticipated by Cordia et al. Patent No. 5,341,915, claims 1-3, 5-12, 15-16 and 18-20 have been rejected under § 103 as being unpatentable over the Long Patent No. 5,129,641 in view of *Cordia et al.* and claims 1-3, 5-13, 15 and 16-20 have been rejected under § 103(a) as being unpatentable over *Long* in view of *Cordia et al.* as applied above and further in view of Delsanto Patent No. 5,038,915. Each of these references has been carefully considered and amendments have been made to the claims to clearly distinguish from such references, both individually and in combination. Accordingly, reconsideration is respectfully requested in view of the amendments to the claims and the following comments.

As described in the present application as filed, various problems existed in the prior art, particularly the corrugated art, when transferring objects such as carton blanks from a first, slower moving conveyor to a second, faster moving conveyor. One involved excessive belt wear resulting from one or more belts sliding over a portion of the blank because of the conveyor speed differential. A second involved wearing and possible damage to the blanks as a result of

sliding movement relative to the belts, particularly with respect to cartons that contained printed matter. The present invention solves both of these problems by substantially eliminating the conveyor speed differential at the point of transfer. This is done by detecting the position of a given blank as it approaches the end of the first conveyor, accelerating the first conveyor with the plurality of blanks thereon to a speed which substantially matches the faster moving second conveyor, maintaining it at that speed until the transfer is complete, and then decelerating or reducing the speed of the first conveyor to its normal velocity until the next blank is detected. The process is then repeated.

The method as described above and as reflected in independent claims 1 and 9, clearly distinguish from the methods disclosed in each of the three references relied upon by the Examiner. In particular, independent claims 1 and 9 clearly distinguish from the method described and disclosed in the Cordia et al. patent, which appears to be the primary reference relied upon to disclose transfer of an object from a slower moving conveyor to a faster moving conveyor.

To understand the differences between the present claims and the cited references, a clear understanding of the Cordia et al. patent is needed. Although *Cordia et al.* results in objects being transferred from a slower conveyor to a faster moving conveyor, it accomplishes this in a manner entirely different from that of the present invention and in a manner significantly different than that of the present claims. Specifically, neither *Cordia et al.* nor *Long* nor *Delsanto* discloses the steps of detecting the position of a blank traveling along the first conveyor, accelerating the first conveyor, with the plurality of blanks thereon, to substantially match the speed of the second conveyor, transferring the blank from the first conveyor to the second conveyor when the first conveyor is traveling at the second velocity and then decelerating or reducing the velocity of the first conveyor, with the plurality of blanks thereon, after a predetermined period of time in response to the detecting step.

In *Cordia et al.*, a series of conveyors are disclosed for transferring objects from an initial low friction accumulation conveyor 12 traveling at a velocity of V_1 to a target conveyor 11 traveling at a faster velocity of V_5. This series of conveyors includes the low friction accumulation conveyor 12, the high friction accumulation pre-phasing conveyor 15, a first, phasing/transfer 20 comprised of the phasing conveyor 25 and the transfer conveyor 26, a second phasing/transfer conveyor 21 comprised of the phasing conveyor 22 and the transfer conveyor 23

and finally, the target conveyor 11. As disclosed, the velocity V_2 at which the conveyor 15 operates is less than the velocity V_1 of the accumulation conveyor 12 and the velocity V_4 of each of the transfer conveyors 23 and 26 is constant and is the same as the velocity V_5 of the target conveyor 11. Thus, each of the velocities V_1, V_2, V_4 and V_5 of the conveyors 12, 15, 26, 23 and 11 are constant with velocities V_4, and V_5 being equal. In contrast, the phasing conveyors 25 and 22 are operated by a servo motor which can either accelerate the conveyors 25 or 22, decelerate the conveyors 25 or 22 or simply maintain the speed of the conveyors 25 and 22 at its normal velocity of V_3 which is equal to the velocity V_2 of the accumulation pre-phasing conveyor 15.

The acceleration or deceleration of the conveyors 25 and 22, however, is only momentary and is only to position the articles so that they are properly spaced from one another as they leave the phasing conveyors 25 and 22 and are transferred to the transfer conveyors 26 and 23, respectively. There is absolutely no disclosure that at this point of transfer, either of the phasing conveyors 25 or 22 has been accelerated to the velocity V_4 of the transfer conveyors 26 and 23. In fact, the disclosure is specifically to the contrary. First, as clearly disclosed (column 9, lines 5-10), the normal velocity V_3 of the phasing conveyors 22 and 25 and V_2 of the accumulation pre-phasing conveyor 15 are approximately equal and the velocity V_4 of the transfer conveyors 23, 26 (and the target conveyor 11) are approximately 1.6 times the velocity of V_3 of the phasing conveyors 22 and 25. Because the system of *Cordia et al.* contemplates that articles will be transferred from the accumulation conveyor 12 to the accumulation pre-phasing conveyor 15 and then to the initial phasing conveyor 25 in various phases, the function of the phasing conveyor 25 (and also the phasing conveyor 26) is to provide adjacent articles with the proper gap and to essentially get them into phase. If the article is out of phase, such as in a position along the flow path A either before or after where it should be, then the phasing conveyors 22 or 25 are accelerated or decelerated "momentarily" to reposition the article properly. Then, as the article moves to the transfer conveyors 23 and 26, the articles are accelerated (because the transfer conveyors 23 and 26 are traveling at a faster speed) and the proper gap is formed from the trailing article. The bottom line is that at the point of transfer, the phasing conveyors 22 and 25 are not accelerated to the velocity V_4 of their respective transfer conveyors. In fact, if this were the case, it would completely destroy the spacing of the subsequent articles on the phasing conveyors.

In other words, transfer of an article from the slower moving phasing conveyors 22 and 25 to their faster moving transfer conveyors 23 and 26 occurs simply as a result of the article being dumped onto or conveyed from the conveyors 22 and 25 to the faster moving transfer conveyors 23 and 26. As soon as the article (or a substantial portion of the article) engages the transfer conveyors 23 and 26, it is accelerated to the speed of that conveyor. In fact, as disclosed, each of the transfer conveyors 23 and 26 is comprised of an endless member in the form of a plurality of lugs 46 moving at a substantially constant speed and at the same velocity as the target conveyor 11 and a belt conveyor which receives the articles from the phasing conveyors 22 and 25 and which runs at a velocity faster than the lugs 46 and the target conveyor 11 so that during its operation, the faster moving belt conveyor actually pushes the article against the rearward side of the moving lugs 46 so as to provide a final phasing/squaring operation.

The Long patent is directed to a multiple stage dispenser for delivering cards or the like and includes a plurality of conveyor sections 18A, 18B and 18C. Although each of the three conveyors is independently controlled, the speed at which the conveyors operate, when they are actuated, is the same and is constant. The sole purpose of the invention of *Long* is to dispense cards to advance and fill gaps in a feed sequence while the leading card is temporarily resting at the demand location. There is absolutely no disclosure that a card, when transferred from one conveyor to another, is transferred by accelerating one conveyor to match the velocity of another.

Delsanto relates to an article synchronizing apparatus for wrapping or boxing machines and has been cited for its teaching that the length of each article in a conveyor may be set into the controller formed by PLCs. There is no teaching or disclosure in *Delsanto* of transferring of an article from a slower moving conveyor to a faster moving conveyor in which the slower moving conveyor is sequentially accelerated to the speed of the faster moving conveyor so that the transfer occurs when the conveyors are running at the same speed.

With the system of *Cordia et al.*, the problems of prior art conveyors described in the Background of Invention section of the present application continue to exist, namely, the excessive wearing of belts and the possible damage or smearing of ink on the transferred articles. This arises because during the transfer process of *Cordia et al.*, a portion of the transferred article is exposed to belts of different speeds.

Independent claim 1 requires accelerating the first conveyor, with the plurality of blanks thereon, in response to the detecting step to substantially match the velocity of a second

conveyor. For the reasons discussed above, this is simply not disclosed either in *Cordia et al.* or in *Long* or *Delsanto*. In *Cordia et al.*, to the extent there is acceleration of the phasing conveyors 22 and 25, it is only a "momentary" acceleration to properly position or gap the articles thereon. In fact, the disclosure of *Cordia et al.* also contemplates, where appropriate, a deceleration of the phasing conveyor or simply maintaining the phasing conveyor at its normal speed, with no acceleration or deceleration.

Independent claim 1 has also been amended to require transferring at least a portion of said one blank from the first conveyor to the second conveyor "when said first conveyor is traveling at said second velocity". Again, this is not disclosed in *Cordia et al.*, *Long* or *Delsanto*. In fact, *Cordia et al.* specifically states that the velocity V_4 and V_5 of the transfer conveyors 23 and 26 and the target conveyor 11 is faster than the velocity V_3 of the phasing conveyors 25 and 22 and specifically about 1.6 times faster. Accordingly, independent claim 1 is clearly patentable over *Cordia et al.* under § 102 and over *Cordia et al.* and *Long* or *Cordia et al.*, *Long* and *Delsanto* under § 103. Reconsideration is respectfully requested.

Similar to independent claim 1, independent claim 9 requires accelerating the first conveyor from the first velocity to substantially match the second velocity in response to detecting the position of a given blank. For the same reasons as discussed above with respect to claim 1, neither *Cordia et al.*, *Long* or *Delsanto* discloses such a step.

Independent claim 9 has been further amended to require the step of "repeating said detecting, accelerating, transferring and decelerating steps for each said subsequent blank". This is clearly not disclosed in the references. With respect to *Cordia et al.*, whether the phasing conveyor 22 and 25 is accelerated, decelerated or maintained at the same velocity and the extent to which it is accelerated or decelerated is determined as a result of a detecting step. This is not the case with respect to claim 9 in which the first conveyor is always accelerated in response to the detecting step to substantially match the velocity of the second conveyor and then, after transfer, decelerated to its first velocity in response to detecting the position of the blank. Such a step is not disclosed in the references. Accordingly, independent claim 9 is clearly patentable over *Cordia et al.* under § 102 and over a combination of *Cordia et al.* and *Long* and a combination of *Cordia et al.*, *Long* and *Delsanto* under § 103. Reconsideration is respectfully requested.

Each of the dependent claims includes all of the limitations of their respective independent claims and are thus patentable for the same reasons.

Original dependent claim 14 was indicated as containing allowable subject matter. This claim has been rewritten in independent form to include all the limitations of its respective independent claim 9 and the various intervening dependent claims. Accordingly, formal allowance of independent claim 14 is respectfully requested.

In view of the discussion of the prior art references, the amendments to the claims and the distinctions between the references and the amended claims, it is submitted that all of the claims are now in condition for allowance. Such action is respectfully requested.

Respectfully submitted,

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